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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,377	02/13/2001	Vladimir M. Segal	30-5022(4015)	2320

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David G Latwesen
Wells St. John
601 West First Avenue
Suite 1300
Spokane, WA 99201

EXAMINER

WESSMAN, ANDREW E

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 04/07/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/783,377

Applicant(s)

SEGAL ET AL.

Examiner

Andrew E Wessman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-28 and 32-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-28 and 32-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 21-28 and 32-34 remain for examination. Claims 21 and 33 have been amended. Claims 35-44 have been added.

2. In view of the amendment to the claims, the rejection under 35 U.S.C. 112, 2nd paragraph has been withdrawn.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 23, 2003 has been entered.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 21, 22, and 32-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. in view of Xu et al. (U.S. Patent No. 6,451,179).

Dunlop et al. teaches (col. 4, lines 28-33) sputtering targets comprising aluminum and up to 10 wt% of copper, silicon, zirconium, titanium, tungsten, platinum, gold, niobium, rhenium, scandium, cobalt, molybdenum, hafnium, and mixtures thereof. This

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range includes applicant's claimed range of 1000ppm or less, and Dunlop et al. provides examples (col. 8, line 16 and Figs. 3 and 4) of additions as low as 0.5 wt%, which is approximate to that of applicant's claimed invention. Dunlop et al. also teaches (col. 4, lines 16-21) grain sizes of less than 20 microns for aluminum sputtering targets. Dunlop et al. also teaches (see Fig. 4) that targets may be made by a process including casting, in this case continuous casting.

With regards to the features of amended claim 21 and claims 35, 41, and 43, wherein the aluminum has a purity of at least 99.999at%, Dunlop et al. does not specifically teach the purity of the aluminum used in the sputtering targets.

Xu et al. teaches (claim 8, col. 2, lines 55-62) using 99.999% pure aluminum in sputtering targets, and teaches that using aluminum of such purity is useful for preventing the dewetting of the wetting layer, which improves coverage of the sputtered layer and reduces the formation of voids in the overlayer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use aluminum of 99.999% purity as taught by Xu et al. in the sputtering target of Dunlop et al. in order to prevent dewetting of the wetting layer, improve coverage of the sputtered layer, and reduce the formation of voids in the overlayer.

In regards to the features of claim 34, wherein the target is monolithic, Dunlop et al. shows (figs. 6-8) a process wherein a monolithic target is worked. The disclosure of Dunlop et al. is primarily directed towards the production of monolithic targets.

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In regards to the features of claims 35, wherein the target is made by a process including equal channel angular extrusion, Dunlop et al. teaches (col. 3, lines 39-51) creating sputtering targets using equal channel angular extrusion.

With regards to claim 33, Dunlop et al. does not teach making the sputtering target having a size greater than or equal to $890 \times 910 \times 19 \text{ mm}^3$. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make a sputtering target of the size necessary for its intended use. Change in size is insufficient to distinguish the claimed invention from the prior art. See *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955), MPEP 2144.04 IV. Also, there is no suggestion in Dunlop et al. that the prior art disclosure would not be functional for any sputtering target size.

6. Claims 23-28 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop et al. in view of Xu et al. and further in view of Ueda et al.

Dunlop et al. in view of Xu et al. is discussed in the above paragraphs.

Dunlop et al. in view of Xu et al. does not specifically teach additions of amounts as small as 100ppm of additives into the alloy.

Ueda et al. teaches additions of 0.01 to 1.0wt% of scandium, silicon, hafnium, or titanium to aluminum alloy sputtering targets (see abstract). Ueda et al. also teaches that such a material is useful for making wire which is resistant to breakage.

It would have been obvious to one of ordinary skill in the art to add the amounts of scandium, silicon, hafnium or titanium taught by Ueda et al. to a sputtering target taught by Dunlop et al. in view of Xu et al., because one would expect to create a

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sputtering target with small grain size as taught by Dunlop et al. in view of Xu et al. that would be useful for creating a wire material with resistance to breakage, as taught by Ueda et al.

Response to Arguments

7. Applicant's arguments filed January 9, 2003 have been fully considered but they are not persuasive. In the remarks, applicant argues that Dunlop et al. does not teach a process utilizing casting, however, Dunlop et al. teaches specifically (figure 4) that aluminum from a continuous casting process may be used in the process. Applicant argues that Dunlop et al. requires the use of liquid dynamic compaction processes, however, Dunlop et al. specifically teaches (col. 9, lines 14-21) that the processing of the material does not necessarily include liquid dynamic compaction, only that it may. One of ordinary skill in the art would be apprised by Dunlop et al. of the ability to use equal channel angular extrusion on a cast material as claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew E Wessman whose telephone number is (703)305-3163. The examiner can normally be reached on Monday through Friday, 8:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (703)308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9310 for regular communications and (703)872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.


ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

AEW
April 3, 2003